HOUGHTON MIFFLIN HARCOURT

February 15, 2011

Mr. Jeff Zaring
State Board of Education Administrator
Indiana Department of Education
Room 225 State House
Indianapolis, IN 46204

Attention: Mr. Jeff Zaring, Administrator

Dear Dr. Bennett and Members of the State Board of Education,

We respectfully request that the State Board of Education reconsider the assessment of Houghton Mifflin Harcourt's secondary math series: *Holt McDougal Algebra 1, Geometry*, and *Algebra 2*, and *Holt McDougal Larson Algebra 1, Geometry*, and *Algebra 2*. Both of these programs were listed as "Unsatisfactory" after review by the Dana Center and Indiana teachers despite conflicting recommendations by the two groups. It is our opinion that the reviews by both groups were subjective and not thorough, and therefore led to inconsistencies and contradictions between the evaluation of individual standards and overall ratings.

To begin, reviewers erroneously deemed Labs and Activities, key elements of the programs, as optional, which was not the intent of the publisher. Labs and Activities are integral to our coverage of the standards, and by not reviewing them the committee missed essential content supporting our coverage of the Standards for Mathematical Practice.

The following are two examples of the subjective overall rating of the textbooks

- For *Holt McDougal Algebra 1*, the reviewer assigned a rating score of 3 or 4 (strong rating) for 42 of the criteria, and 1 or 2 (weak rating) for 27 of the criteria yet the summary rating was a 1, the lowest possible score.
- For *Holt McDougal Larson Algebra 1*, the reviewer assigned a rating score of 3 or 4 (strong rating) for 75 of the criteria, and 1 or 2 (weak rating) for another 75 of the criteria, yet the summary rating again was a 1, the lowest possible score.

Attached please find responses to each title in our series, citing specific ratings and responses where possible. Since there was an inconsistency in the amount of detail we were provided from the reviewers, it was difficult for us to provide a thoughtful response to the rating. For some levels we received comprehensive reviews and comments, while for others, we only received partial documentation.

In regard to the Standards for Mathematical Practice, the Dana Center reviewed only a small portion of the overall program in its review of these Standards. Our coverage of the Standards for Mathematical Practice is integrated throughout the program, as the mathematical practices are not equally applicable to every mathematical concept. For a true understanding of how we integrate and provide complete coverage of these standards, the Dana Center would need to review the entire program.

Thank you for reconsidering these Houghton Mifflin Harcourt instructional materials for adoption by the teachers of Indiana.

Sincerely,

John Sipe
Senior Vice President, National Sales Manager
Houghton Mifflin Harcourt

Response to Review of *Holt McDougal Larson Algebra 1*
for the Indiana Mathematics Adoption

Alignment to the Standards for Mathematical Practice

Summary

While the Dana Center rated *Holt McDougal Larson Algebra 1* as Minimal Evidence, we believe that assessment overlooked several key features of the program that strongly support the Standards for Mathematical Practice. Dana Center reviewers also used their own discretion to exclude content that they consider "separate sections," such as Investigating Algebra Activities and Graphing Calculator Activities. That claim is subjective, as the publishers believe these are key instructional elements within the student text. In addition, Dana Center reviewers only reviewed a small portion of the content provided. All mathematical practices are not equally applicable to different mathematical concepts, so many of their responses may have been unfairly biased by looking at an isolated section of material. Specific details relating to each of the standards are noted below. We believe the sum of these constitutes far more than Minimal Evidence.

1. Make sense of problems and persevere in solving them.

The Dana Center notes that open-ended questions appear "occasionally" in the lessons. Actually, every lesson in the Student Edition contains Writing questions and one or more of the following: Open-Ended, Short Response, Extended Response, and Error Analysis. Mixed Review of Problem Solving features, which appear twice per chapter, offer further opportunities with open-ended questions. In addition, the Teacher Edition includes Key Questions in every lesson to support problem solving and foster classroom discussions. The Dana Center reviewer also cites weaknesses regarding multiple representations and alternate approaches. Multiple representations are abundant in both lesson instruction and exercises (e.g., pp. 45, 54, 96, 146, and 216-217). Alternate approaches are integrated throughout the text and highlighted in Problem Solving Workshop features (e.g., p. 34, 102, and 147).

2. Reason abstractly and quantitatively.

As noted by the Dana Center reviewers, lessons and exercise sets include "many application problems" and "frequent opportunities for students to represent real-world situations in symbols." While some of these questions are broken out to guide student thinking, many involve multiple steps and leaps in thinking that are not necessarily apparent in a cursory review. Attention to reasonableness and the correct use of units is embedded in the instruction and exercises. In many exercises, students must explain and justify the reasoning of their responses.

3. Construct viable arguments and critique the reasoning of others.
The Dana Center reviewer notes that exercise sets contain questions that ask students to explain their thinking, analyze errors, and justify their solutions. The reviewer suggests that these opportunities are limited, but these types of questions are abundant and consistent throughout exercise sets. As noted above, every exercise set contains Writing questions and one or more of the following: Open-Ended, Short Response, Extended Response, and Error Analysis. In addition, opportunities to describe, explain, and justify are embedded within many regular exercises. For example, in Lesson 5.5, which was cited by the Dana Center reviewer, there are at least a dozen exercises that require these skills of students (pp. 321-323 Exercises 2, 17, 27, 29, 30, 32c, 33c, 34, 35, 36c, 37b, and 41a). The Dana Center reviewer also cites a lack of opportunities to make conjectures, but these opportunities are provided in the Investigating Algebra Activities in every chapter.

4. Model with mathematics
The Dana Center reviewer notes that *Holt McDougal Larson Algebra 1* offers students ample opportunities to "create mathematical models for real-world application problems." In addition, the reviewer notes that concepts are modeled "with physical models or a lab" but complains that these are "in a separate section, so implementation is up to the teacher." The publisher reiterates that the Investigating Algebra Activities and Graphing Calculator Activities are essential instructional components and should not be arbitrarily dismissed or considered optional. Modeling opportunities include visual patterns (e.g., p. 14), Algebra tiles (e.g., pp. 132-133), physical models (e.g., p. 234), graphing calculators (e.g., p. 290-291), Internet research (e.g., p. 342), regressions (e.g., pp. 692-693), and simulations (e.g., pp. 849-850).

5. Use appropriate tools strategically.
The Dana Center reviewer notes that graphing calculators are effectively integrated in lessons and activities throughout the book. The reviewer complains about the lack of other technology in the "chapters reviewed." We have no way of knowing precisely which chapters were provided to the reviewer, but there are clearly other technologies present in the program, including spreadsheets (e.g., pp. 85, 154) and a wide variety of online activities. The reviewer also suggests that "tools and technology are not used to investigate mathematics;" however, counterexamples abound (e.g., pp. 42, 234, 290-291, 404, and 426).

6. Attend to precision.
As noted by the Dana Center reviewer, examples "use proper notation and are precise;" however, the reviewer notes that there are limited opportunities for students to communicate. Students have ample opportunities for written communication in the exercise sets as noted in the response to Standard 3. Further opportunities for discussion are provided in the Teacher Edition. Every lesson contains an Essential Question, Key

Questions to foster discussion around the examples, and a Closing the Lesson feature to guide a discussion of important lesson concepts.

7. Look for and make use of structure.
Holt McDougal Larson Algebra 1 offers ample opportunities for students to develop patterns and analyze structure in algebraic contexts. Patterns are explored with and without technology, especially in the Investigating Algebra Activities (e.g., pp. 14, 73, 234, 282, 290-291, 362, 488, and 530). All of these activities also demonstrate using "specific examples moving to generalization." Complaints that these occur in a "separate section" are unwarranted because these activities are an integral part of the program's instructional philosophy.

8. Look for and express regularity in repeated reasoning.
As noted in the response to Standard 7, there is an abundance of the use of patterns to develop mathematical concepts and to determine rules. The Draw Conclusions sections in the activities expressly draw out reasoning and generalizations from student observations (e.g., pp. 234, 379, and 662). Problem Solving Workshop features showcase alternative methods and allow students to apply new strategies in familiar situations (e.g., 260-261 and 590-591).

Content Alignment to the Common Core State Standards for Mathematics

Summary
While *Holt McDougal Larson Algebra 1* received Weak ratings in all categories on the summary page, the source of these ratings is unclear. Scores on the supporting sections were substantially higher, with the text receiving numerous 3s and some 4s. This disconnect suggests that *Holt McDougal Larson Algebra 1* deserves a substantially higher rating in all categories.

Important Mathematical Ideas
Reviewer Rating: Weak (1-2)
Reviewer Comment: "Topics tend to be disconnected and taught as isolated topics. There is little taught as multiple approaches (i.e., solving equations 3.1 – 3.4 and factoring lessons, excluding optional activities)."

Response: The average of all the ratings for Important Mathematical Ideas in the supporting documentation is 2.7. This alone should be enough to earn a rating of Moderate for this category. We also disagree with the reviewer comments above. Concepts are carefully developed throughout the text to build on each other and to develop a thorough mathematical foundation. Connections are made throughout, both explicitly in the text and in exercises and discussion questions. The reviewers admittedly excluded what they deem "optional" content from their review. Once again, the publisher considers these activities integral to the instructional approach of the program, and the

merits of these activities should be fully considered in the rating system. Any other approach is patently unfair. Despite the reviewers' comment about multiple approaches, multiple approaches are given throughout the book and highlighted in the Problem Solving Workshop features (e.g., 260-261 and 590-591). The supporting materials also indicate that two standards involving completing the square were not covered at all, but both of these standards are directly addressed in Lesson 10.5.

Skills and Procedures
Reviewer Rating: Weak (1-2)
Reviewer Comment: "These were not developed conceptually (i.e., exponents 8-3). The skills were taught in isolation, and the procedure is the primary focus as each new lesson begins with "how-to" and 4-5 worked out examples."

Response: The average of all the ratings for Skills and Procedures in the supporting documentation is 2.8. This alone should be enough to earn a rating of Moderate for this category. We also disagree with the reviewer comments above. New topics, skills, and procedures are developed carefully and conceptually. In the discussion of Lessons 8.3, the reviewer fails to note that the section is preceded immediately by an activity that uses patterns to develop the concept of negative exponents. The reviewer's focus on internal lesson content and unwillingness to fairly assess the content in the Activities destroys the instructional integrity of the program. The publisher would never advise teachers and students to skip critical content elements. Again the reviewer over-generalizes by stating that "each new lesson begins with 'how-to' ..." This statement mischaracterizes concept development by ignoring Activities.

Mathematical Relationships
Reviewer Rating: Weak (1-2)
Reviewer Comment: "Problems are practiced as "naked" problems until the end of the problem set when they are taught more application type problems."

Response: The average of all the ratings for Mathematical Relationships in the supporting documentation is 2.5. This alone should be enough to earn a rating of Moderate for this category. The reviewer comment is an over-generalization. In fact, every exercise set begins with vocabulary and/or writing exercises. Various exercise types are included early in many sets, including applications, Error Analysis, and Open-Ended problems. In fact, students solve application problems before they even begin the exercise set through the Guided Practice problems that accompany the instructional examples (e.g., pp. 164, 208, 263 and 408).

Overall Rating
Reviewer Rating: Weak (1-2)
Reviewer Comment: "The book marches through a series of lessons where an isolated skill and procedures are introduced and practiced without extension or connection to bigger ideas."

Response: The average of all the ratings for Overall Rating in the supporting documentation is approximately 2.7. This alone should be enough to earn a rating of Moderate for this category. Once again, the reviewer comment is an over-generalization. The reviewer effectively dismisses content taught in important Activities and dismisses exercise sets as "naked" practice. With a keener review, mathematical connections and big ideas would be more apparent. Every chapter and lesson begins with a Before/Now/Why? feature that sets the concepts at hand in a mathematical and real-world context. Exercise sets continually reinforce previously learned skills and concepts. Larger ideas are brought together in Problem Solving Workshop, Mixed Review of Problem Solving, and Big Ideas features that appear in every chapter. With strong conceptual development, rich practice of skills and procedures, and integrated connections among mathematical ideas, *Holt McDougal Larson Algebra 1* is an effective program to address the Common Core State Standards for Mathematics.